Fever various

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An
Inaugural Dissertation
Papers
On
Yellow Fever
As it appeared in Savannah in 1822

By

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Of

Georgia

ostler

The disease termed by Nosologists Typhus Icterodes or Yellow fever, an Endemic of a Tropical climate, had for some years been remarked for its regular occurrence in Savannah; but did not assume its peculiar frightful appearance and fatality until the summer of 1820: when by its utmost virulence it excited the greatest interest among the Physicians, and offered ample scope for the exercise of speculation & precept. This, like all other diseases, is modified by climate, mode of life, & that infinite variety of causes which influence the animal economy, and has therefore created a fluctuation of opinion and practice coincident with its various changes, from which circumstance no unity of view is adopted, and no determinate data prescribed for our practice. Governed therefore by a variety of opinions, & systems founded upon them, the Physicians of Savannah have adopted plans of practice, as diametrically opposite, as the conclusions which they drew from different premises. Placed, by my

esteemed friend and tutor Doctor A. C. Daniell, in the Hospital of that city in the year 1822, I had an opportunity of observing the course of the fever, of becoming acquainted with the different views and plans of treatment of each of the attending Physicians, and the few cursory remarks which I shall make are the results of my observation on the comparative success attending them.

With regard to its cause the greater part of the Medical world have come to the same conclusion. Originating in situations exposed to the exhalations of putrified vegetable matter, & affecting the system as other miasmatic diseases do, they have been compelled to discard the pernicious, & somewhat antiquated opinion of Contagion. We however find some who obstinately adhere to, and attempt to promulgate that doctrine, against whom argument upon argument has been adduced, facts sufficient to carry conviction to the greatest dogmatist upon earth, still they withhold their assent, we are induced to believe that they are ashamed to renounce

an opinion, which they have not ingenuity to maintain with credit to themselves.

A short time after its appearance in Savannah in 1820 Doctr Hosack of New York believing it to be an instance in support of his favourite doctrine unequivocally asserted its importation & consequent contagion, but he was premature as he had not received his intelligence from sources sufficiently authentic to justify him in forming that opinion. Among all observant persons of that city it was notorious that it originated from putrid exhalations. The fire of the preceding winter (1819) had created such devastation, as to render it impossible to rebuild the city for some length of time in consequence of which, the ruins of houses sinks &c offered sufficient reservoirs for the rain which fell during the months of July and August, on these collections of water & matter of various kinds the subsequent elevation of temperature had full effect, and the exhalations in a short time became so copious concentrated, and virulent as to produce the fever in its most aggravated form. Such a

profusion of facts occured during this period as to banish even from the minds of the inhabitants all idea of contagion. Among the great mass the following appear most satisfactory-

1st Parents attending an expiring child, friends assisting their dying companions wont repeatedly have the Black vomit cast from the patients mouths, over their clothes into their faces, still they suffered no injurious consequences-

2nd It was remarked that the French residents who emigrated from the West India Islands, and their descendants (natives of the city) escaped with impunity the ravages of the disease. To their being climatised and their temperate mode of life, is to be attributed their exemption from the fever. 3rd Writers on the subject of contagion, have remarked that its influence is not felt beyond a few feet. Still we find that during this time several instances occured where people from the country were attacked with, and died of this disease, who were known to

have passed through the city, without exposing them-
-selves to the influence of contagion.
4th Differing from all other diseases which are known
to be contagious, we find that the progress of the fever
was arrested on the advent of cold weather, & stilled by a hard
frost. 5th Its occurrence in the country where it could
not be traced to contagion, an instance which carries
more force with it than any other within my recollection
is its annual recurrence in the Interior of Virginia,
where it can be evidently traced to miasmata, and has
not been known to evince any of its contagious qual-
ities 6th Its regular diminution & disappearance
since the adoption of the Dry Culture System+
With then so many facts before us, can we for one moment
listen to the advocates of contagion? Let us rather in
our cities have a vigilant police, and industrious scaven-
gers. Let us abolish the productions of this doctrine. Let
the unfortunate patient, who suffers in the foul wards
of a Lazaretto, be amongst us, let him have the attendants

+See note 1st

the comforts and conveniencies which should belong to a sick chamber, and the aggregate of mortality will be annually diminished.

This disease appears in its most aggravated form in the months of September and October, and continues until winter. Though the symptoms vary considerably, yet the following are the most common. The patient at first complains of languor and debility and disinclination to pursue his ordinary avocations, a sense of stupor supervenes which continues a few hours, slight shiverings are at length experienced, which is succeeded by a reaction in the system producing fever, the second stage in the disease. The patient then complains of pain in his head back & loins, eyes are suffused and pupils dilated, the temperature of the skin rather above the ordinary standard, pulse frequent apparently full but sinking under pressure, skin of a yellow bilious colour, tongue has a slight white fur, bowels constipated, urine small in quantity and of a brick dust colour, stomach possessing great sensibility under

pressure and a sense of internal heat, complains of great debility. These continue for a day and night, when the symptoms become aggravated. The temperature of the system is diminished, skin cold & clammy, and at times a profuse sweat breaks out over the whole body, pulse becomes thin feeble and threadlike, a dull muddy ideotic or glassy eye, pupils permanently dilated, the tongue becomes black, then dry and hard, and the teeth and gums covered with sordes, bowels often constipated, but if evacuations are produced we find them watery black and very fetid. If the disease is not speedily arrested, it will in a short time terminate fatally. The patient becomes so comatose and insensible as to render it impossible to arouse him for any length of time, there is a complete prostration of strength, great distortion of countenance, involuntary discharges from the bowels, pulse fluttering, nervous tremors, singultus and finally death terminates the scene —

Post mortem examinations, made by Doctr. Daniell and others, reveal to us the stomach principally affected. On opening it we find it full of a fluid of a dark green almost black colour. "Red spots, more or less numerous, are to be found on the mucous coat and especially in the cardiac and pyloric portions, dissecting away the villous & nervous coats, the veins external to the latter are found turgid, and the arteries empty. On holding up these two coats (still attached together) between the eye and the sun, it is clearly seen that each red spot is distinct, though frequently they are so studded together that on opening the stomach they appear as one continued red colour. These specks are about the size of the point of a writing pen, and irregular in their shape, sometimes they exhibit the appearances of the minute extremeties of the veins injected with red matter. In terspersed with these spots there are frequently to be perceived black points about half the size of a common cap pin, which are fixed

on the villous coat and somewhat imbedded in it. Dissecting the villous from the nervous coat, the red spots are still to be seen on the former and no traces of them can be found on the latter." In a letter which I received from Doctor Screven the last summer He says "I have examined five bodies since the commencement of the summer. In all of these I have found the mucous coat of the stomach and duodenum covered with red spots, and the gall bladder distended with bile variously altered from its healthy state, sometimes like tar in colour and consistence, in others like coffee grounds, but in every instance staining the skin yellow. In two cases treated with Calomel & Jalap, the red spots just mentioned extended throughout the alimentary canal, and were also found in the urinary bladder, the patient having voided bloody urine, the spots in the bladder are precisely like those in the stomach. In one case the red spots were

confined to the stomach, and the intestines had their mucous membrane covered with black spots, many of which however on minute inspection had a shade of red. The liver & spleen were healthy in all except one, which I found unusually soft & filled with dark grumous blood. In one case I could trace with ease the enlarged veins of the stomach supplying the red spots. These red appearances never extended beyond the mucous coat –

On this state of the stomach the Physicians of Savannah adopted various opinions, the greater part, from an undue attachment to authority, adopted the favourite view of the day viz inflammation. But on an accurate analysis of the symptoms, my esteemed preceptor was compelled to vary in his conclusions, which have been substantiated by subsequent experience. In order for us to arrive at a just conclusion, let us view the com-

-mon effects of Miasmata on the system, compare the symptoms of this fever with those effects, and the results of Post Mortem examinations, we will immediately adopt that most obvious opinion that the bloodvessels labour under a state of congestion, and consequent inability to perform their proper functions, that there is a loss of balance in the circulation, and that the system is labouring under such a state of depression as to render a speedy relief absolutely necessary. Pathology reveals to us three sets of vessels morbidly affected in this fever viz the arteries the veins and the capillaries. Of these the two first are absolutely & mutually dependent, the last have however somewhat of an independent action, they are all however governed by the same laws, and influenced by the same causes, but in different degrees according to their power of action or the irritability with which they are endowed. We there=

fore find that though all are affected they still suffer in different proportions, as an instance, let us take the cold stage of Intermittent fever, here we find the capillaries completely inactive, the veins sluggish, and the arteries less affected than all, just the same is it with the disease of which I am treating. Assigning then miasmata as the cause, let us view its effects. We find that its first impression on the system, from the simple intermittent to the most aggravated form of disease, is so powerfully sedative, as to produce a paralysis (if I may so term it) of the bloodvessels robbing them of their power of action, and suffering that stage of congestion to ensue which we notice in this disease. All the symptoms indicate this. What causes that state of languor & debility which ushers in the disease? What causes that sluggishness and inactivity in the capillaries, & the consequent

cold & relaxed skin which is so remarkable? What causes that insensibility & stupor in the close of the disease? What causes that particular state of the mucous coat which Post Mortem examinations reveal? The answer to these is plain. The concentrated powers of Miasmata invading the system in its most sensible part, by sympathy affects the system, & paralyses the bloodvessels. The Vis Medicatrix Naturæ of Cullen, or some inexplicable cause, endeavours to arouse the system by exciting vascular action, but stunned as it is by the violent attack, only one set of vessels regain their action (& that only in a degree) the arteries act and the veins and capillaries become receptacles for blood, that state of engorgement ensues which I have noticed, & which according to the laws of the animal economy exists, in those parts where the cause first acted, in the greatest degree. A loss of ballance is

therefore produced in the circulation, the system sinks under depression, & the whole train of symptoms ensue

Let us now test the truth of these views by the only just and legitimate criterion experience, & let them stand or fall by the result.

The treatment of this disease has varied with the opinions respecting its proximate cause. Some of the Physicians, adopting the views of Rush, treated it as they would other inflammatory diseases by venesection Emetics and Cathartics, together with the whole train of depletory measures, but if success justified with them the practice it was contrary to my observation. In order to produce what they term a reaction in the system, the lancet has been resorted to, but in every instance that came under my care the patient fell a victim to the plan of practice, for if the disease was mild in the first stage, the patient in a

short time suffered such great prostration, as to render it impossible to arouse him. The absurdity of this practice to me is so obvious as hardly to deserve a comment. Let a simple question suffice. Would we to arouse the system by a reaction, & to relieve the vessels from this state of congestion resort to the lancet when so little blood remained in the general circulation? The answer is plain, subtracting from that small quantity would produce prostration & but too speedy death. With regard to Emetics and Cathartics the same objections exist. Tho in a degree stimulants when taken into the stomach, their evacuant operation counteract the first effect, & increase the prostration. Introduced not at the commencement of the disease but when the system is prepared for them, they become valuable & even indispensable auxiliaries. In this general failure of remedies the Physicians found

it expedient to discard some of their views, and adopt a directly contrary plan of practice. They resorted to stimulants, but here again failure awaited them. The Spiritus Terebinthinæ as a dernier resort was administered, though it claims the highest authority & has gained a deserved reputation in diseases of a Typhoid character, yet from its misapplication to the disease, or its being ill timed, it produced none of those salutary effects which I daily witnessed the last winter, in fevers of a low grade in the Alms House of this city. The preparations of the Carbonas Ammoniæ with the alcoholic mixtures shared a similar fate. Now that I have objected to all these modes of practice the question will properly be put, what plan will you resort to? I answer that which it shall be my duty now to detail. In the words of Johnson, "we find that

that "there exists between different & often distant parts of the body, a certain connection or relation, which in medical language, is called "consent of parts" that is when one part is affected by particular impressions the other sympathises as it were, and takes on a kind of analagous action. Of these sympathies none is more universally remarked, or familiarly known than that which exists between the external surface of the body, and the internal surface of the alimentary canal. This indeed seems less incomprehensible than many others since the latter appears to be a continuation of the former with the exception of the cuticle" Aware then of this sympathy, we are not surprised to find the surface in that torpid state, cold relaxed and covered with moisture. From the views which we have taken the indications which present themselves are plain

a powerful revulsion must be produced, the balance of vascular action restored, and the system aroused, or death will speedily take place. To produce these effects the surface offers itself as a fit point to be acted upon, but at the very threshold we are met with a query. Are Blisters or Sinapisms the most effectual? The difficulty of discussing the merits of these two applications, is too great for so mere a tyro in medicine as I am, I shall therefore have to appeal to authority. Doctr Daniell found from ample experience that effects produced by these remedies should be prompt, and that the excitement should be kept up. Comparing the efficacy of these two applications he says. 1st When Blisters are used to resuscitate action, the torpor of the skin is such that they frequently fail to produce any effect.

2nd When however they do vesicate, the inflammation which they previously excite, and which is chiefly or-

or alone serviceable, from the revulsion which it creates, is removed by the discharge of serum.
3rd The stage at which they exercise a revulsive effect, between the time of exciting inflammation and its solution by the effusion of serum, is too short to cause an efficient influence.
4th They sometimes create a distressing strangury which adds much to the sufferings of the patient & exhausts his strength 5th Each succeeding application of a blister produces less excitement than the former, and a much greater consumption of excitability.
6th Blisters only affect the surface of the skin.
Over these Rubefacients have decided advantages.
1st They produce a more certain powerful and ~~per~~ permanent revulsion than blisters.
2nd They inflame the whole depth of the skin.
3rd This inflammation may be excited and perpetuated by the reapplication of the plaster, & each time the action is greater than before, because it

operates on a more tender surface, and produces a more prompt and revulsive effect
4th The inflamed surface is not relieved by a discharge, consequently the revulsive power is maintained. 5th Rubefacients will act when from the torpid condition of the skin blisters have no influence.
6th Producing no discharge, they are not followed by a loss of strength. 7th They cause no strangury.
8th They frequently relieve restlessness, procure sleep, and compose the patient.
9th They lessen the disordered action of the bloodvessels, tranquilize the pulse, and excite perspiration.
10th They relieve the sensation of internal heat & burning. 11th They produce evacuations from the bowels skin or bladder. 12th The inflammation, produced by them on the skin, is increased during the exacerbations of fever.
13th They are most serviceable when they destroy the intermittent or remittent character of the fe

-ver, and produce continued or constant fever, which gradually abates, and in a few days at farthest, the vascular action resumes its healthy state, without being able to fix the precise hour of such termination, and the patient finds himself uneqpectedly in the enjoyment of complete health. If any medicine can be said to exert a truly magic effect in this low form of fever it is the application of sinapisms. In one case which to me was very striking I saw the patient completely insensible, but so soon as these remedies began to act, vascular action increased & a new life was diffused through him, in other instances where patients were on the brink of dissolution, they have been so aroused by the remedies, as for a time to give hopes of a recovery, but the disease was too far advanced, and out of the power of man. These sinapisms should be continued on the upper and lower extremeties and over the epigastrium until the

skin is inflamed, when we will find that they have equalized the circulation, imparted strength to the patient, and prepared him for the subsequent practice. It then becomes necessary to relieve the stomach of its foul accumulations, for which purpose, the exhibition of Cathartics become invaluable, and should be administered according to the idiosyncracy of the patient, wherever it is admissible I prefer the following.

℞ Sub. Muri. Hydrargiri grs XV

Sulphur. Aurat. Antimonii grs ij

Misce et divide in Pulv No IV. Give one every hour and one hour after the last powder

℞ Oleum Ricini ℥j. or Sulphas Magnesiæ ℥ss. The indications to be fulfilled by this prescription are plain, the mercurial purge operates on the bowels, and the Antimonial preparation assists in accomplishing our principal objects, determination to the skin, and equali

zation of vascular action. It sometimes happens that by the great operation of this medicine the previous excitement is counteracted, and the same train of symptoms recur, a reapplication of the Sinapisms then become necessary, together with the internal use of stimulants. Of these I prefer the Capsicum Annuum (Cayenne pepper) in an infusion of Serpentaria Marilandica (Snake root) in the following proportions ℞ Capsicum Annui ʒij

Serpentariæ Marilandicæ ℥j

Aquæ bullient. ℔j

Of this let the patient drink freely. It is true the Cayenne pepper has been much overlooked as a stimulant, yet if any article is deserving of our confidence it is truly this, it exerts the most powerful & prompt action, and is decidedly the best stimulant that can be resorted to in this state. Frequently it was given in combination with Cinchona stimulating, and imparting tone to the vessels speedily

bringing the fever to a crisis. These combinations producing such salutary effects soon gives every prospect of a speedy convalescence, vascular action is equalized, the temperature of the system is developed and the skin becomes healthy. It however becomes necessary during this time to keep the alimentary canal open by means of small doses of Sulphas Magnesiæ, and the infusion of Serpentariæ as a stimulating diaphoretic is to be continued until the patient is free of fever.

So soon as we have accomplished this measure we resort to tonics. of which we have a selection. The Peruvian Bark given even during the fever to assist in producing a crisis and also at this time as a tonic is excellent. the doses must be suited to the state of the patient. Simply as a tonic or rather stomachic and corroborant I prefer the following

℞ Pulvis Radicis Columbæ grs x

Carbonas Potassæ grs v Misce. Give a powder every two hours, together with a free use of the Malt liquors

This simple but efficient practice has stood the test of several years, and increasing popularity and success are the rewards of its author. Adopted as it must be it will be the saving of thousands, it will robb the disease of half its terrors, ameliorate the sufferings of the patient, and permit us, under the influence of that genial climate, to enjoy the pleasures of life unalloyed by appaling anticipations which have hitherto haunted the stranger and the citizen

Note 1st The following abstract from the report of the dry culture committee on the subject of draining the rice fields and low lands in the vicinity of Savannah may not be inappropriate, and will clearly prove the influence of Miasmata in producing this disease. "Previous to the introduction of the dry cul

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ture system, such was the humidity of the atmosphere of this city during the long flow upon the rice, that a person after being exposed for a short time at night could wring water from his locks of hair hanging below his hat. Now throughout the season there is a dryness and elasticity of atmosphere the very reverse of what previously existed. This must be salutary to health. Previous to the introduction of this system, the Bay was notoriously the most unhealthy part of the city, as that portion lying south of South Broad street was the most healthy. The reverse now obtains and from causes the most obvious. The Bay from its proximity to the land subjected to the dry culture system is most immediately under the influence of that system, and its improved salubrity is one of the many unequivocal evidences of the agency of the latter upon the health of Savannah. Whereas that portion of the city south of South Broad street formerly farthest removed from

the cultivation of Rice has within the last three years been thrown more immediately under the influence of a wet culture by the opening of an extensive Rice field immediately to its South West. The appearance of the inhabitants is much changed. Formerly a stranger was impressed with the melancholy character of our climate by the blanched faces of our inhabitants. of late the remark is general that their faces are quite as indicative of health as those of persons residing in cities to the North. Besides these evidences your committee refer you to the bills of mortality. It will appear that the proportion of persons dying of autumnal disease, to the population for several years past previous to & since the adoption of this system is as follows.

Wet Culture			Dry Culture		
In 1815	one	in 15	In 1818	one	in 62 3/4
1816	do	do 18	1819	do	do 13
1817	do	do 9 3/4	1820	do	do 5 1/10
			1821	do	do 37

Dry culture

In 1822 one in 33 4/5

1823 do do 32 1/2

The estimate of deaths previous to the introduction of this system for a number of years was about one in fourteen. In 1819 there was a remarkable addition of a labouring class of whites to our population from exposure in temperance &c a number of these fell victims to our climate swelled the bills of mortality. In 1820 the yellow fever raged to a great extent. The last three years of the term there was about one death to every 34 which compared to the last three years that elapsed previous to the introduction of the dry culture system is incontestible evidence of the advantage of that system

Wilkins